auxiliary line selection unit that selects the first reference auxiliary line and first adjacent auxiliary lines or selects the second reference auxiliary line and second adjacent auxiliary lines. The travel control unit causes the work vehicle to autonomously travel along at least a part of the auxiliary lines selected by the auxiliary line selection unit.

[0012] Accordingly, it is possible to make the work vehicle autonomously travel in the headland area, based on either auxiliary lines with reference to the farm field peripheral edge or auxiliary lines with reference to the work area peripheral edge.

[0013] In the autonomous travel system, it is preferable that, in a case where an interval between the second adjacent auxiliary line and the farm field peripheral edge is narrower than ½ of the work width or ½ of the work machine width, the adjacent auxiliary line creation unit does not create the second adjacent auxiliary line or deletes the second adjacent auxiliary line after creation.

[0014] Accordingly, it is possible to prevent a path on which the work machine makes contact with the farm field peripheral edge or a path on which the work is performed outside the farm field from being created.

[0015] In the autonomous travel system, the following configuration is preferable. That is, the autonomous travel system includes a selection processing unit that performs a process of allowing a user to select in which of the work area and the headland area the work is to be performed and a process of allowing the user to select whether the work in the headland is to be performed or the work is to be ended. In a case where it is determined that the user has selected the work in the headland area, the travel control unit causes the work vehicle to autonomously travel along at least a part of the auxiliary lines created by the reference auxiliary line creation unit and the adjacent auxiliary line creation unit.

[0016] Accordingly, it is possible for the user to make the work vehicle autonomously travel in the headland area by performing a simple operation.

[0017] According to the third aspect of the present invention, an autonomous travel system having the following configuration is provided. That is, this autonomous travel system includes a farm field acquisition unit, an auxiliary line creation unit, a selection processing unit, and a travel control unit. The farm field acquisition unit obtains information of a farm field including a work area, in which a travel path for a work vehicle on which a work machine is mounted to autonomously travel to perform work is set, and a headland area, which is formed between the work area and a farm field peripheral edge. The auxiliary line creation unit creates an auxiliary line for causing the work vehicle to autonomously travel in the headland area. The selection processing unit performs a process of allowing a user to select in which of the work area and the headland area the work is to be performed and a process of allowing the user to select whether the work in the headland is to be performed or the work is to be ended. The travel control unit causes the work vehicle to autonomously travel along at least a part of the auxiliary line created by the auxiliary line creation unit in a case where it is determined that the user has selected the work in the headland area.

[0018] Accordingly, it is possible for the user to make the work vehicle autonomously travel in the headland area by performing a simple operation.

BRIEF DESCRIPTION OF DRAWINGS

[0019] FIG. **1** is a side view illustrating an overall configuration of a tractor used in the autonomous travel system according to an embodiment of the present invention.

[0020] FIG. **2** is a plan view of the tractor.

[0021] FIG. **3** is a block diagram illustrating a main configuration of the autonomous travel system.

[0022] FIG. **4** is a diagram illustrating a travel path on which the tractor is caused to autonomously travel for performing work in a work area of a farm field.

[0023] FIG. **5** is a diagram illustrating a first reference auxiliary line and first adjacent auxiliary lines created in a headland area.

[0024] FIG. **6** is a flowchart illustrating the processing for creating the first reference auxiliary line and first adjacent auxiliary lines.

[0025] FIG. **7** is a diagram schematically illustrating a flow of the processing for creating the first reference auxiliary line and first adjacent auxiliary lines.

[0026] FIG. **8** is a diagram illustrating a second reference auxiliary line and second adjacent auxiliary lines created in the headland area.

[0027] FIG. **9** is a flowchart illustrating the processing for creating the second reference auxiliary line and second adjacent auxiliary lines.

[0028] FIG. **10** is a diagram schematically illustrating a flow of the processing for creating the second reference auxiliary line and second adjacent auxiliary lines.

[0029] FIG. **11** is a flowchart illustrating the processing related to work in the work area and the headland area.

[0030] FIG. **12** is a diagram illustrating an image displayed on a wireless communication terminal after a path is created.

[0031] FIG. **13** is a diagram illustrating an image displayed on the wireless communication terminal while performing work in the work area.

[0032] FIG. **14** is a diagram illustrating an image displayed on the wireless communication terminal while performing work in the headland area.

DESCRIPTION OF EMBODIMENTS

[0033] Next, an autonomous travel system of an embodiment of the present invention will be explained. The autonomous travel system is for causing one or more work vehicles to autonomously travel in a farm field (travel area) and to execute all or a part of the work. Although a tractor is taken as an example of the work vehicle in the explanation of the present embodiment, the work vehicle can also include a walking-type work machine as well as a riding-type work machine such as a rice transplanter, combine, civil engineering/construction work device, or snowplow, other than a tractor. In the present specification, autonomous traveling means that a control unit (ECU) included in a tractor controls the traveling-related configuration included in the tractor so that at least steering is autonomously performed along a predetermined path. Further, such a configuration in which the vehicle speed or work by the work machine is autonomously performed in addition to steering is also possible. Autonomous traveling includes a case in which a person is on board the tractor and a case in which no person is on board the tractor.

[0034] Next, with reference to FIG. **1** through FIG. **3**, a specific explanation is given of the autonomous travel